Space Weather Forecast

Issued on Wednesday, 22 June 2022 at 13:12 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily chance of an isolated Moderate-class X-ray flare.
Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with occasional common class X-ray flares. There remains one significant sunspot in the northwest quadrant which is large and complex, though all other regions are small or relatively simple and stable.

No Earth directed CMEs (Coronal Mass Ejections) were observed on available imagery. Some imagery suggests a CME (coronal mass ejection) being emitted from the southwest limb late on 21st June, though further imagery is necessary before an analysis takes place.

Solar Wind / Geomagnetic Activity: The solar wind speed has fluctuated between slightly elevated and elevated throughout the past 24 hours. The interplanetary magnetic field was generally weak, with weak variations between positive and negative. Geomagnetic activity was generally Quiet (Kp 1-2) with two Unsettled (Kp 3) intervals.

Energetic Particles / Solar Radiation: The high energy proton flux remained at background, with no solar radiation storms observed in the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low, with a daily chance of an isolated Moderate flare and a very slight chance of a Strong flare.

Solar Wind / Geomagnetic Activity: No coronal mass ejections currently feature in the forecast. Though one potential coronal mass ejection from the southwest limb is yet to be analysed.

Solar winds should continue their initial decline and return towards slow-ambient levels by Day 2 (23rd). Winds are expected to become slightly elevated to elevated during Day 3 and Day 4 (24th/25th), under the influence of coronal hole high speed streams from 2 separate coronal holes. Geomagnetic activity should be mostly Quiet with perhaps the odd Unsettled interval through the first half of the period, but become Unsettled to Active with a slight chance of a G1/Minor storm during Days 3 and 4 (24th/25th).

Energetic Particles / Solar Radiation: Solar radiation storms are not likely in the period and proton flux should remain at background levels. However, there is a daily slight chance of an S1 or greater event occurring, due to the presence of a moderately large and complex sunspot region transiting the northwest quadrant.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	30	30	20
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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